Journal of Vegetation Science 11:307-314, 2000

Fire and seedling population dynamics in western Oregon prairies

Maret, Mary P.[1] & Wilson, Mark V.[*]

Department of Botany and Plant Pathology, 2082 Cordley Hall, Oregon State University, Corvallis, OR 97331, USA; [1]*Current address: Sacramento Department of Regional Parks, Recreation and Open Space, 4040 Bradshaw Road, Sacramento, CA 95827 USA;* [*]*Corresponding author; Fax +15417373573; E-mail wilsonm@bcc.orst.edu*

Abstract. Through an experiment in three prairie vegetation types in western Oregon, USA the effect of prescribed fire on the timing and rates of seedling emergence and mortality was examined. Seeds of common exotic and native prairie species were sown into burned and unburned plots in late September, 1995. Emerged seedlings were censussed the following winter, early spring and late spring. Results indicated that spring population levels could not be forecast by fall seedling flushes, as winter survival was important in seedling establishment. The bulk of emergence for all grass and annual forb species occurred in the fall, followed by low to severe winter mortality. Perennial forbs were more variable in emergence times but, once emerged, perennial forb seedlings were likely to become established. Burning caused a statistically significant increase in seedling accumulation through emergence and survival in 11 of 23 cases. Burning improved seedling winter survival for most grass and short-lived forb species and increased emergence of perennial forb species. These patterns were most conspicuous on the two sites dominated by exotic species, where burning significantly improved the accumulation of seedlings from most native species tested. Thus, prescribed burning might be a useful restoration tool in these communities. In contrast, two of the three species increased by burning in the native bunchgrass site were exotic pest plants, suggesting that fire should be prescribed with caution.